Ronan Le Bras

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Seattle, WA 98115
(607) 333-8758

Current Position

Allen Institute for Artificial Intelligence June 2016 - now
Research Scientist

Education

Ph.D. in Computer Science 2009 - 2016
Cornell University, Ithaca NY, USA

Advisor: Prof. Carla P. Gomes
Committee: Prof. Carla P. Gomes, Prof. Bart Selman, Prof. John E. Hopcroft
Thesis: *Leveraging Human Insights into Problem Structure for Scientific Discovery*

M.S. in Computer Engineering 2008 - 2009
Ecole Polytechnique Montreal, Montreal QC, Canada

Advisor: Prof. Gilles Pesant
Thesis: *Applying Probabilistic Message-Passing Algorithms to Search Heuristics for Solving Constraint Satisfaction Problems*
Nominated for the best 2010 University Master's Thesis

B.Eng. in Software Engineering 2004 - 2008
Ecole Polytechnique Montreal, Montreal QC, Canada
Degree with highest honors

C.P.G.E. in Mathematics and Physics 2001 - 2004
Montaigne, Bordeaux, France

Research Interests

Commonsense Reasoning; Natural Language Understanding; Computational Sustainability; Combinatorial Optimization; Artificial Intelligence;
Automated Reasoning; Big Data; Machine Learning; Bayesian Inference;
Human Computation; Crowdsourcing

Scholarships

Alexander Graham Bell Canada Graduate Scholarship 2009 - 2010
Natural Sciences and Engineering Research Council of Canada (NSERC)

Masters Research Scholarship 2009 - 2010
Fonds québécois de la recherche sur la nature et les technologies (FQRNT)

J.A. Desève Funds Scholarship 2009
Fonds J.A. Desève

Scholarship for excellence in Master's program 2008 - 2009
Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation (CIRRELT)

Scholarship for excellence 2004
Rotary International, The Rotary Foundation

Teaching Experience

Teaching Assistant Spring 2016
Cornell University, Department of Computer Science
Head TA for the course *Introduction to Analysis of Algorithms*

Guest Lecturer Spring 2013
Cornell University, Department of Computer Science
Graduate course, *Topics in Computational Sustainability*

Teaching Assistant Fall 2010
Cornell University, Department of Computer Science
Review sessions and office hours in *Artificial Intelligence*
TA Award of Excellence

Teaching Assistant Jan-Dec 2007
University of HEC Montreal, Department of Quantitative Methods
Lectures and tutorials in *Probability and Statistics*

Teaching Assistant Jan-Dec 2007
Ecole Polytechnique Montreal, Department of Computer Science
Lectures and lab sessions in *Computer Architecture*
Lab sessions in *Programming Language* (C++)

Research & Development Experience

Cornell University 2009 - 2016
Research Assistant to Prof. Carla P. Gomes *full-time*
Research in Computational Sustainability

Ecole Polytechnique Montreal Jan-Apr 2008
Research Assistant to Prof. Gilles Pesant *part-time*
Research on constraint-centered search heuristics for combinatorial problems

Caisse de dépôt et placement du Québec May-Aug 2007
Intern, Market-risk Department *full-time*
Improvement of market data processes; automation of financial portfolio values computation

Univoc Services Inc. May-Dec 2006
Scientific Programmer, R&D Department *full-time*
Numerical designs for a speech-recognition analyzer system based on Monte-Carlo simulations; integration of numerical functions within a graphical user interface

Professional Service

PC member
AAAI 2011/2017/2018/2019/2020
CPAIOR 2013
IJCAI 2013/2015

Reviewer
AAAI 2010/2011/2013-2015/2017-2020
Annals of Mathematics and Artificial Intelligence
CP 2010/2011/2016
CPAIOR 2012-2014
EMNLP 2020
IJCAI 2013/2015/2020
INFORMS Journal of Computing
ITCAI 2010
Journal of Combinatorial Designs
Journal of Machine Learning Research
NAACL/NeuralGen 2019
NAACL/SemEval 2019
SAT 2013
SIAM Journal on Discrete Mathematics (SIDMA)
SoCS 2013/2014

Publications **Conferences and Journals**

[2020]

[1] **Le Bras**, R., Swayamdipta, S., Bhagavatula, C., Zellers, R., Peters, M. E., Sabharwal, A., and Choi, Y. (2020). Adversarial filters of dataset biases. *ICML*

[2] Bhagavatula, C., **Le Bras**, R., Malaviya, C., Sakaguchi, K., Holtzman, A., Rashkin, H., Downey, D., Yih, S. W.-t., and Choi, Y. (2020). Abductive commonsense reasoning. *ICLR*

[2019]

[3] Sakaguchi, K., **Le Bras**, R., Bhagavatula, C., and Choi, Y. (2019). Winogrande: An adversarial winograd schema challenge at scale. *AAAI,* ****Outstanding Paper Award****

[4] Bisk, Y., Zellers, R., **Le Bras**, R., Gao, J., and Choi, Y. (2019). Piqa: Reasoning about physical commonsense in natural language. *AAAI*

[5] Sap, M., Rashkin, H., Chen, D., **Le Bras**, R., and Choi, Y. (2019). Social iqa: Commonsense reasoning about social interactions. *EMNLP*

[6] Huang, L., **Le Bras**, R., Bhagavatula, C., and Choi, Y. (2019). Cosmos qa: Machine reading comprehension with contextual commonsense reasoning. *EMNLP*

[7] Hopkins, M., **Le Bras**, R., Petrescu-Prahova, C., Stanovsky, G., Hajishirzi, H., and Koncel-Kedziorski, R. (2019). Semeval-2019 task 10: Math question answering. In *SemEval@NAACL-HLT*

[8] Sap, M., **Le Bras**, R., Allaway, E., Bhagavatula, C., Lourie, N., Rashkin, H., Roof, B., Smith, N. A., and Choi, Y. (2018). Atomic: An atlas of machine commonsense for if-then reasoning. In *AAAI*

[2017]

[9] Hopkins, M., Petrescu-Prahova, C., Levin, R., **Le Bras**, R., Herrasti, A., and Joshi, V. (2017). Beyond sentential semantic parsing: Tackling the math sat with a cascade of tree transducers. In *EMNLP*

[10] Xue, Y., Bai, J., **Le Bras**, R., Rappazzo, B., Bernstein, R., Bjorck, J., Longpre, L., Suram, S. K., van Dover, R. B., Gregoire, J., et al. (2017). Phase-mapper: An AI platform to accelerate high throughput materials discovery. In *the 29th Conference on Innovative Applications of Artificial Intelligence*, IAAI'17, ****IAAI Innovative Application Award****

[11] Diaz, M., **Le Bras**, R., and Gomes, C. P. (2017). In search of balance: The challenge of generating balanced latin rectangles. In *the Fourteenth International Conference on Integration of Artificial Intelligence and Operations Research Techniques in Constraint Programming*, CPAIOR'17

[12] Suram, S. K., Xue, Y., Bai, J., **Le Bras**, R., Rappazzo, B., Bernstein, R., Bjorck, J., Zhou, L., van Dover, R. B., Gomes, C. P., et al. (2016). Automated phase mapping with agilefd and its application to light absorber discovery in the V–Mn–Nb oxide system. *ACS Combinatorial Science*

[2016]

[13] Xue, Y., Ermon, S., **Le Bras**, R., Gomes, C. P., and Selman, B. (2016). Variable elimination in the fourier domain. In *the 33rd International Conference on Machine Learning*, ICML'16

[2015]

[14] Zou, T., **Le Bras**, R., Salles, M., Demers, A., and Gehrke, J. (2015). Cloudia: a deployment advisor for public clouds. *The VLDB Journal, ***Special Issue on the Best Papers of VLDB 2013****

[15] Ermon, S., **Le Bras**, R., Suram, S. K., Gregoire, J. M., Gomes, C. P., Selman, B., and van Dover, R. B. (2015). Pattern decomposition with complex combinatorial constraints: Application to materials discovery. In *the 29th Conference on Artificial Intelligence*, AAAI'15

[2014]

[16] **Le Bras**, R., Xue, Y., Bernstein, R., Gomes, C. P., and Selman, B. (2014). A human computation framework for boosting combinatorial solvers. In *the 2nd AAAI Conference on Human Computation and Crowdsourcing*, HCOMP'14

[17] **Le Bras**, R., Gomes, C. P., and Selman, B. (2014). On the erdos discrepancy problem. In *the 20th International Conference on Principles and Practice of Constraint Programming*, CP'14

[18] **Le Bras**, R., Bernstein, R., Gregoire, J. M., Suram, S. K., Gomes, C. P., Selman, B., and van Dover, R. B. (2014). A computational challenge problem in materials discovery: Synthetic problem generator and real-world datasets. In *the 28th Conference on Artificial Intelligence*, AAAI'14

[2013]

[19] **Le Bras**, R., Bernstein, R., Gomes, C. P., and Selman, B. (2013). Crowdsourcing backdoor identification for combinatorial optimization. In *the 23rd International Joint Conference on Artificial Intelligence*, IJCAI'13

[20] **Le Bras**, R., Gomes, C. P., and Selman, B. (2013). Double-wheel graphs are graceful. In *the 23rd International Joint Conference on Artificial Intelligence*, IJCAI'13

[21] Zou, T., **Le Bras**, R., Salles, M. V., Demers, A., and Gehrke, J. (2013). Cloudia: a deployment advisor for public clouds. In *the 39th International Conference on Very Large Data Bases*, VLDB'13

[22] **Le Bras**, R., Dilkina, B., Xue, Y., Gomes, C. P., McKelvey, K. S., Montgomery, C., and Schwartz, M. K. (2013). Robust network design for multispecies conservation. In *the 16th Conference on Artificial Intelligence*, AAAI'13

[23] Dilkina, B., Gomes, C. P., Lai, K., **Le Bras**, R., McKelvey, K. S., Sabharwal, A., Schwartz, M. K., Suter, J., and Xue, Y. (2013). Large conservation landscape - synthetic and real-world datasets. In *the 16th Conference on Artificial Intelligence*, AAAI'13

[24] Finger, M., **Le Bras**, R., Gomes, C. P., and Selman, B. (2013). Solutions for hard and soft constraints using optimized probabilistic satisfiability. In *the 16th International Conference on Theory and Applications of Satisfiability Testing*, SAT'13

[2012]

[25] **Le Bras**, R., Gomes, C. P., and Selman, B. (2012). From streamlined combinatorial search to efficient constructive procedures. In *the 15th Conference on Artificial Intelligence*, AAAI'12

[26] **Le Bras**, R., Ermon, S., Damoulas, T., Bernstein, R., Gomes, C., Selman, B., and van Dover, R. B. (2012). Materials discovery: New opportunities at the intersection of constraint reasoning and learning. In *International Conference on Computational Sustainability*, CompSust'12

[27] Ermon, S., **Le Bras**, R., Gomes, C. P., Selman, B., and van Dover, R. B. (2012).

Smt-aided combinatorial materials discovery. In *the 15th International Conference on Theory and Applications of Satisfiability Testing*, SAT'12

[2011]

[28] **Le Bras**, R., Damoulas, T., Gregoire, J. M., Sabharwal, A., Gomes, C. P., and van Dover, R. B. (2011). Constraint reasoning and kernel clustering for pattern decomposition with scaling. In *the 17th International Conference on Principles and Practice of Constraint Programming*, CP'11

[2009]

[29] **Le Bras**, R., Zanarini, A., and Pesant, G. (2009). Efficient generic search heuristics within the embp framework. In *the 15th International Conference on Principles and Practice of Constraint Programming*, CP'09

Workshops

[2012]

[30] **Le Bras**, R., Bernstein, R., Gomes, C. P., Selman, B., and van Dover, R. B. (2012). Human computation for combinatorial materials discovery. In *the Human Computation for Science and Computational Sustainability NIPS Workshop*, HCSCS'12

[2010]

[31] **Le Bras**, R., Damoulas, T., Gregoire, J. M., Sabharwal, A., Gomes, C. P., and van Dover, R. B. (2010). Computational thinking for material discovery: Bridging constraint reasoning and learning. In *the 2nd International Workshop on Constraint Reasoning and Optimization for Computational Sustainability*, CROCS'10

Technical Reports

[2012]

[32] **Le Bras**, R., Perrault, A., and Gomes, C. (2012). Polynomial time construction for spatially balanced latin squares. Technical report, http://hdl.handle.net/1813/28697, "eCommons Cornell University"

References

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